

Abstract of the Disclosure

The invention is a magnetic device, i.e., a magnetoresistive sensor or a magnetic tunnel junction device, that has a ferromagnetic structure of two ferromagnetic layers antiferromagnetically coupled together with an improved antiferromagnetically coupling (AFC) film. The AFC film is an alloy of $\text{Ru}_{100-x}\text{Fe}_x$ where x is between approximately 10 and 60 atomic percent. This AFC film increases the exchange coupling by up to a factor of two and has an hcp crystalline structure making it compatible with Co alloy ferromagnetic layers.